REMARKS

Claims 1-25 are presented for further examination without amendment, addition, or cancellation.

In the Office Action mailed September 25, 2007, the Examiner rejected claims 1-8, 10-14, and 19-25 under 35 U.S.C. § 103(a) as unpatentable over either CN 1330368 ("Xu et al.") or Shuy et al. '160 (of record) in view of U.S. Patent No. 6,033,752 ("Suzuki et al.") combined with either of Japanese Patent 10-143919 ("Yoshida et al.") or European Patent 1,122,723 ("Aratani et al."). Claims 1-25 were rejected as obvious over either Xu et al. or Shuy et al. in view of Suzuki et al. combined with either of Yoshida et al. or Aratani et al., and further in view of Morimoto et al. '345 (of record), Japanese Patent 59-225,922 ("Shigeta et al."), and Japanese Patent 2000-285509 ("Kinoshita et al.").

Applicants respectfully disagree with the bases for the rejections and request reconsideration and further examination of the claims.

Applicants note that the Examiner has only made a spot translation of the Xu et al. Chinese patent, and that Shuy et al. '160 is not the corresponding English document, although they are similar. Applicants have not made a translation of Xu et al. However, inasmuch as it appears that Xu et al. and Shuy et al. are based on the same priority document, applicants' remarks below regarding Shuy et al. apply equally to Xu et al.

Claim Rejections

Shuy et al. is directed to a transparent layer containing Ge or Si, for example, and having a thickness of 5 to 500 nanometers and a reflecting layer containing Cu, for example, and having a thickness of 1 to 500 nanometers. When light is projected thereonto, the element contained in the transparent layer and the element contained in the reflecting layer form an alloy, thereby forming a semi-transparent layer (see paragraphs 0026 to 0028).

While the Examiner makes reference to the thickness of the layers in Shuy et al., none of the pending claims define the thicknesses of the first recording film and the second recording film. Thus, applicants are unsure as to why the Examiner is referring to the thicknesses of the layers in Shuy et al.

In the embodiments of Shuy et al. shown in Figures 1A and 1B, because a laser beam is projected onto a recording medium from the side of the substrate 10 (Figures 2A and 2B), the substrate 10 of Shuy appears to function as a light transmission layer. However, the references numerals 50 and 60 designate a thermal manipulating layer and a protective layer, respectively, and no reflective layer as set forth in the claims is included in the recording medium shown in Figures 1A and 1B.

Moreover, Shuy et al. does not state that the layer 40 contains 10% to 30% atomic of Al, although Shuy et al. do state at paragraph 0027 that the layer 40 may be formed of an alloy of Cu and Al.

In this regard, the working examples set forth in the specification of the presently pending application experimentally prove that in the case where the amount of Al added to the second recording film was in the range of 10 atomic % to 30 atomic %, the jitter of the reproduced signal was equal to or lower than 6%, *i.e.*, jitter could be substantially reduced (see Figure 17). It is clear that the claimed numerical limitation of 10% to 30 atomic % of Al has a critical technical application.

Shuy et al. do not teach, disclose, or suggest the claimed feature that the optical recording medium comprise a recording layer and that the second recording film contain 10 to 30 atomic % of Al as an additive. This teaching is not found in any of the translation provided by the Examiner of the Xu et al. reference.

Suzuki et al. is directed to an optical recording medium that has a first layer 3 and a second layer 4 adjacent to the first layer 3. The first layer 3 is constructed of a metal that has a low melting point and a high reflectance, and Suzuki et al. illustrate In, Sn, Pb, and Zn as examples of a metal for constructing the first layer 3 (see column 6, lines 1-16).

On the other hand, the second layer 3 is constructed of a material that will, upon mixing or reaction with the first ayer 3, form an alloy with a low reflectance. Suzuki et al. state that it is preferable for the second layer 3 to be constructed of a material that incorporates at least one element from either group 5B or group 6B of the periodic table if the first layer 3 contains In as a primary component, and that in the case where the second layer 4 is constructed entirely of

one of the aforementioned elements, As, Se, Sb, Te, and Bi are preferable (see column 6, line 59 through column 7, line 35).

Furthermore, Table 7 of Suzuki et al. refers to the layer of Al. Although the Examiner suggests that Suzuki et al. can compensate for the deficiency of Shuy et al. in that Shuy et al. do not teach a recording medium having the reflective layer, Suzuki et al. describes only the second layer containing As, Se, Sb, Te, or Bi as a primary component and added with Cu. Suzuki et al. cannot compensate for the deficiency of Shuy et al. wherein Shuy et al. and Xu et al. do not teach a second recording film that contains 10 to 30 atomic percent of Al as an additive.

The Examiner asserts that Yoshida teaches the addition of Al to Cu in amounts of 1 to 30% to improve corrosion resistance (paragraph 0017). While Yoshida does describe at paragraph 0017 a film 3 containing 70 to 99 atomic % of Cu and 1 to 30 atomic % of Al, the optical recording medium of Yoshida includes a dyestuff film 4 as a recording layer, and the reflective film 3 serves to only reflect a laser beam. The reflecting layer of Shuy et al. constitutes a recording layer together with the transparent layer and the second recording layer of the present claimed disclosure serves as part of a recording layer.

In other words, the film 3 of Yoshida does not correspond to the reflecting layer of Shuy et al.

Therefore, because Yoshida neither discloses nor suggests the a second film containing 10 to 30 atomic % of Al as an additive, Yoshida cannot compensate for the deficiency of Shuy et al. wherein Shuy et al. do not teach a second recording film containing 10 to 30 atomic % of Al as an additive.

Moreover, the Examiner asserts that Aratani teaches a reflective layer having a composition of $Cu_{82.5}Al_{17.5}$, that is copper aluminum 17.5, (for example, Table 2, page 7) and that the reflective films of Aratani function to enable recording (see paragraph 0044 to 0045).

It is true that Aratani et al. states in paragraph 0044 that "*the reflective film 3 causes the information layer 2 to have the function of the reflective film obtained in reading of an essential record such as data information from the recording portion. However, in the*

present invention, the reflective film 3 is used as a recording layer for additional recording." Aratani et al. refers to the additional recording at paragraph 0045.

However, because the optical recording medium S disclosed in Aratani et al. includes an information layer 2 on which an information recording portion is formed by a physical change of shape or uneven pits, it is reasonable to understand that the reflective film 3 of Aratani et al. serves to merely reflect a laser beam and assist the deformation of the information layer 2. It is doubtless that when a laser beam is projected onto the optical recording medium S, the elements of the reflective layer 3 will never mix with the elements (S) of the information recording layer 2.

Therefore, the reflective film 3 of Aratani et al. does not correspond to the reflecting layer of Shuy et al. Although Aratani et al. do describe a reflective film 3 added with 17.5 atomic % of Al, Aratani et al. cannot compensate for the deficiency of Shuy wherein Shuy et al. do not teach or suggest the second recording film containing 10 to 30 atomic % of Al as an additive.

Turning next to the second grounds of rejection, as argued above, none of Shuy et al., Suzuki et al., Yoshida et al., and Aratani et al., taken alone or in any combination thereof, suggest or disclose the claimed features of "a second recording film containing Cu as a primary component and 10 to 30 atomic % of Al as an additive." Moreover, the Examiner does not assert that Morimoto et al., Shigeta et al., or Kinoshita et al., taken alone or in any combination, teach these claimed features. Thus, it is apparent that these three references cannot compensate for the deficiency of Shuy et al. wherein Shuy et al. (and Xu et al.) do not teach or suggest that the second recording film contain 10 to 30 atomic % of Al as an additive.

As stated above, it is clear from the working examples in the present application that the claimed limitation of 10 to 30 atomic % of Al has a critical technical application. To the contrary, although Shuy et al. state at paragraph 0027 that the layer 40 may be formed of an alloy of Cu and Al, Shuy et al. do not refer to the amount of Al to be added to the reflective layer 40.

Furthermore, Suzuki et al. describe at column 6, line 59, to column 7, line 35, only that the second layer 4 may be formed of an alloy from the group consisting of As, Se, Sb,

Te, or Bi and Cu, Suzuki et al. neither disclose nor suggest a recording layer or film containing both Cu and Al.

On the other hand, while Yoshida et al. describe at paragraph 0017 of the machine translation provided by the Examiner that the reflective film 3 contains 70 to 99 atomic % of Cu and 1 to 30 atomic % of Al, and that if the content of Cu exceeds 99 atomic % or if the content of the Al is smaller than 1 atomic %, corrosion resistance is lowered, Yoshida also teaches that if the content of Cu is smaller than 70 atomic % or the content of Al exceeds 30 atomic %, the reflectivity is lowered. Moreover, Aratani et al. describes a reflective layer having a composition of $Cu_{82.5}Al_{17.5}$ and functions to allow the additional recording.

Thus, while a recording medium including a recording medium having Cu as a primary component and Al as an additive can be found in only Yoshida et al. and Aratani et al., the optical recording medium of Yoshida et al. includes a dyestuff film 4 as a recording layer and the reflective film 3 serves to only reflect a laser beam. The reflective film 3 of Yoshida does not correspond to the "reflecting layer" of Shuy et al. or to the claimed "second recording film."

Furthermore, because the optical recording medium S disclosed in Aratani includes an information layer 2 on which an information recording portion is formed by a physical change of shape, or uneven pits, it is doubtless that when the recording medium is irradiated with a laser beam, the primary component of the reflecting layer does not mix with the primary component of the information layer 2. It is therefore reasonable to understand that the reflective film 3 of Aratani et al serves to merely reflect a laser beam and assist the deformation of the information layer 2.

Thus, neither Yoshida et al. nor Aratani et al. teach or suggest a recording medium including a first recording film and a second recording film containing Cu as a primary component and 10 to 30 atomic % of Al as an additive and constituted so that when it is irradiated with a laser beam, the primary component of the first recording film and that of the second recording film are mixed with each other.

In view of the foregoing, applicants respectfully submit that the presently pending claims are allowable over the combination of references cited by the Examiner. In the event the Examiner disagrees or finds minor informalities that can be resolved by telephone conference,

the Examiner is urged to contact the undersigned counsel of record by telephone at (206) 622-4900 in order to expeditiously resolve prosecution of this application. Consequently, early and favorable action allowing these claims and passing this case to issuance is respectfully solicited.

Respectfully submitted,

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